



Terms of Reference (ToRs) for Third Party Consultancy

STEAM Pakistan Portal Integration

Background and Context

The Pak Alliance for Maths and Science (PAMS) is a non-profit with a mandate to inform and advocate for a learning environment which keeps the interest of Pakistani students at the heart of policy and practice reform. PAMS has conducted research, piloted innovations, provides technical support to government entities, and advocates for education reform. The organization has head office in Islamabad, with Policy Units based in Karachi, Lahore, Peshawar, and Gilgit.

PAMS' flagship project, [STEAM Pakistan](#), currently provides support to approximately 14,000 schools and counting. The project is dedicated to enhancing access to high-quality Science, Technology, Engineering, Arts, and Mathematics (STEAM) education for secondary school-aged girls in Pakistan. The initiative not only aims to strengthen critical thinking and problem-solving skills among students but also seeks to shift societal perceptions and improve girls' self-confidence in their ability to pursue STEAM subjects. By providing technical support, advocating for policy reforms, and integrating STEAM-focused methodologies into government school systems, the program aspires to create a more inclusive and equitable learning environment.

The STEAM Pakistan portal serves as the primary interface through which schools register to receive support and submit records of their completed activities. These submissions are reviewed and approved by the programme team. The portal also generates summary statistics, such as the number of registered schools, activities conducted, and students or teachers engaged.

PAMS is now seeking to integrate the STEAM Pakistan portal with an external reporting system that will track progress on a defined subset of schools. Approximately 250 schools will be marked within the STEAM portal for this purpose. These schools will be selected and tagged to enable streamlined data sharing with the external system, which consolidates information across multiple initiatives. A third-party contractor will be engaged to support the integration process and ensure that the relevant schools are appropriately tagged for reporting.

Scope of Work

The third-party contractor will be responsible for delivering three core workstreams under this assignment, all of which contribute to enhancing the functionality, interoperability, and data management capabilities of the STEAM Pakistan portal.

1. Integration of the STEAM Pakistan portal with an external reporting system

The contractor will develop and deploy a secure, reliable integration between the STEAM Pakistan portal and an external portal used to track progress across multiple initiatives operating within the same schools. This integration will enable the external system to automatically fetch live data related to a defined subset of schools registered on the STEAM portal.

The STEAM Pakistan data infrastructure spans multiple tools and platforms, each serving a different function in the data lifecycle. The integration will involve working across two distinct platforms. Below is a summary of their respective technology stacks:

A. STEAM Pakistan Portal

- **Database: MongoDB** – Used to store all data, including school registrations, activity submissions, and user information.
- **Backend: Node.js (Express.js)** – Developed using Node.js with the Express.js framework. Acts as the intermediary between the database and frontend. Deployed on Heroku.
- **Frontend: React (Next.js)** – The frontend is built with React using the Next.js framework. Deployed to the steampakistan domain via Bluehost.
- **Media Storage:**
 - **Cloudinary** – Primary media storage platform for uploaded content.
 - **Google Cloud** – Used to back up all media files uploaded to Cloudinary, via automated sync to a Google Cloud bucket.

B. External Reporting System

- **Database: MySQL** – Primary data storage system for all reported information.
- **Data Processing: CSPro (Census and Survey Processing System)** – Serves as a data transformation layer, structuring and preparing data between MySQL and the dashboard.
- **Frontend Interface & Dashboard: Power BI** – Used for developing and displaying dashboards for reporting purposes.
- **Data Entry: CSPro Entry (Android Application)** – Mobile application used for data collection and entry into the system via CSPro.

The contractor will be expected to:

- Conduct a technical review of both systems' APIs, data models, and access protocols.
- Develop a data-sharing layer (e.g., secure API endpoints, webhook configuration, or data export mechanisms).
- Ensure accurate and real-time syncing of required data fields.
- Implement secure authentication and access control protocols for inter-system data flow.

2. Digitization of the STEAM Clubs form

The contractor will digitize an existing form currently used by schools to register and manage STEAM Clubs. At present, submissions are received in scanned PDFs of printed forms, photos of handwritten forms, and/or Word documents (or Word-to-PDF conversions). The form plays a critical role in tracking school-level student registration and participation in STEAM Clubs, and needs to be standardized through a fully digitized version.

The contractor will be responsible for developing a digital version of the form that:

- Is embedded directly within the STEAM Pakistan portal interface
- Is user-friendly and optimized for use across different devices (e.g., Android, iOS, Windows, MacOS)
- Includes form validation to reduce submission errors and ensure data consistency
- Stores submissions within the existing database structure, linked to the relevant school user profiles
- Allows for backend data retrieval and filtering to support monitoring and reporting needs

The current version of the form is available [here](#). The digitized form may also include additional fields, such as students' religion and functional limitation status to support expanded reporting requirements.

3. Tagging and enhanced data collection for a defined subset of schools

The contractor will design and implement a mechanism to tag and differentiate a specific subset of schools within the STEAM Pakistan portal. These will be schools that need to be reported against in the external system. This functionality must allow:

- Tagging of selected schools from the existing pool of registered institutions
- Backend identification of tagged schools for filtering and data export purposes
- Additional data fields or input options for these schools only, to support any enhanced reporting requirements

The tagging system should be flexible enough to allow reclassification of schools over time and should integrate seamlessly into the existing administrative workflow of the portal.

Deliverables and Timeline

The contractor will be expected to deliver the following within **4 weeks** of contract signing. Each deliverable must be accompanied by relevant documentation, handover notes, and code repositories where applicable. Regular check-ins with the PAMS team will be scheduled to ensure alignment and timely resolution of any bottlenecks.

Deliverable	Description	Timeline
1. Technical Review & Integration Plan	Conduct a comprehensive review of the STEAM Pakistan and external portal tech stacks, data models, and access protocols. Submit an integration plan outlining technical approach, required endpoints, and proposed data flow.	Week 1
2. Digitized STEAM Clubs Form	Build and deploy the digitized version of the STEAM Clubs form within the STEAM Pakistan portal. Ensure backend connectivity, error validation, and a user-friendly frontend.	Week 2
3. Tagged School Mechanism	Develop and implement a tagging system within the STEAM portal to identify schools whose data will be accessed by the external portal. This includes the	Week 2

Deliverable	Description	Timeline
	ability to: tag/un-tag schools, view lists, and support filtering/exporting by tag.	
4. Additional Fields for Tagged Schools	Enable collection of additional information (e.g., religion, functional limitation status) for tagged schools only. Implement input validation and data storage protocols.	Week 2
5. API/Data Sync Implementation	Set up secure integration between the two portals (e.g., via authenticated APIs or data endpoints), ensuring only tagged schools' data is shared. Perform initial test sync with sample data.	Week 3
6. Testing & QA	Conduct joint testing with PAMS and (if applicable) external tech teams to validate all integrations and features. Include unit, integration, and user testing where relevant.	Week 4
7. Final Deployment & Handover	Deploy all changes to the production environment. Provide technical documentation, walkthroughs, admin manuals, and codebase handover. Conduct a final review and support knowledge transfer.	Week 4

Qualification and Evaluation Criteria

Bidders will be evaluated based on the following minimum qualifications and criteria. Organizations must clearly demonstrate their experience and capacity in the technical and operational areas relevant to the scope of work:

Minimum qualifications

- Minimum 5 years of experience in web and data platform development, including use of aforementioned and related technologies
- Proven ability to deliver custom portal integrations, including API development, authentication protocols, and secure data exchange mechanisms
- Experience in digitizing forms and workflows, with frontend/backend integration and validation layers
- Capacity to design and implement user tagging systems or other forms of metadata-based filtering within existing platforms
- Experience working on projects with educational or non-profit organizations is preferred

Evaluation criteria

The evaluation will be based on the following weighted components:

Criteria	Weight
Technical proposal and understanding of scope	30%
Relevant past experience and portfolio	30%
Team qualifications and technical expertise	20%
Financial proposal	20%

PAMS reserves the right to seek clarifications or additional documentation from applicants during the evaluation process.

Application process

Please adhere to the following guidelines/stipulations:

- Consultancy Proposal should be sent via email to info@mathsandscience.pk no later than 5 PM (Pakistan Standard Time), 25th June, 2025.
- Emails should be titled: Consultancy Proposal: Portal Integration - [Name of Organization].
- Any proposals received after this date/time will not be accepted.
- Any request for clarification must be sent to the same email by 20th June, 2025. PAMS will respond to the query, including an explanation of the query without identifying the source of inquiry, to all consultants by 23rd June, 2025.
- Incomplete, late and joint proposals will not be considered and only offers for which there is further interest will be contacted.

NOTE: Proposals must be sent to the designated email only (info@mathsandscience.pk). Please do NOT copy or directly email applications to PAMS staff. Please note that only short-listed candidates will be contacted.